

Weed Workshop



March 2011

Presented by Peter Ellmer

Profile Sheet

Common Name:

Fishbone Fern & Boston Fern

- Botanical Name:** Nephrolepis cordifolia- Fishbone Fern
Nephrolepis exaltata – Boston Fern
- Family:** - Davalliaceae
- Status:** - Garden escape
- Habit:** - Fishbone - Erect spreading fern to 70cm
- Boston – Erect spreading fern to 100cm
- Life Cycle:** - Perennial
- Flowering period:** -
- Description:** - Fern with erect yellow/green fronds to 100cm, spreading over large areas from creeping rhizomes
- Leaves** - Fronds, linear in online, smooth except for rough stem, divided in segments (5cm) down to midrib, margin toothed or lobed, pale green, heart shaped segment base
- Flowers** - Nil
- Fruit** - Sori – Spore forming structure covered with kidney shaped tissue (indusia) on lower surface, half way between mid-vein and margin.
- Stems** - Stalks and midrib pale brown, easily broken
- Roots** - Fishbone - Wiry, creeping stolons that bear hairy fleshy spherical tubers & short rhizomes
- Boston – No hairy tubers
- Preferred location:** - Moist situation, bushland drains, creeks, runoff areas
- Dispersal:** - Garden escape or dumping
- Distribution:** - Widespread
- Similar Species:** - *Doodia aspera* (Rasp Fern), *Pellaea falcate* (Sickle Fern)

References:

Spencer. R (1995) Horticultural Flora of South-East Australia - Ferns, Conifers & Their Allies Pg68

F.J & R.G Richardson, R.C.H Shepherd(2006) *Weeds of the South-East* Pg 3



Nephrolepis cordifolia



N. cordifolia- indusia & Pallaea falcate spores



Fishbone Fern –tubers, fronds + rhizomes



Doodia aspera

Profile Sheet

Common Name:	<u>Ehrharta/ Panic Veldgrass</u>
Botanical Name:	<i>Ehrharta erecta</i>
Family:	- Poaceae (Monocot- Grass Family)
Status:	- Environmental Weed (Origin-Southern Africa)
Habit:	- Soft clumping grass to 50cm, lime green
Life Cycle:	- Perennial – 10 weeks – germination to seed set. Seed set 4-6 weeks after disturbance (cool fire)
Flowering period:	- Any time , peak spring early summer
Description:	- Lime green, tufted, short rhizome grass to 50cm with soft drooping leaves and inflorescences that is erect and compact before becoming well-spaced slender branches
Leaves	- Lime green, <20cm long & 2-10mm wide, soft, drooping with age, older leaves commonly blotched or bleached
Flowering stems	- 10-40cm, initially compact & narrow then spreading, branches well spread
Fruit	- Grain, 3mm, oval, awnless. Seed viability close to 100% . Most germinate within 12 months
Stems	- Leaf sheath almost split entire length, keeled on back, smooth
Roots	- Fibrous, shallow, short rhizome (shallow)
Preferred location:	- Moist well drained sites-lighter soils (sandy), shaded conditions
Dispersal:	- Large seed set, rhizomes, water, birds, mowing, contaminate of soil/garden refuse
Distribution:	- Widespread
Similar Species:	- <i>Mircolaela stipoides</i> (Weeping Meadow Grass); <i>Entolasia marginata</i> – seed head tighter, leaves at right angles

References:

F.J. & R.G. Richardson, R.C.H. Shepherd (2006) *Weeds of the South-East* Pg59
A. Muylt (2001) *Bush Invaders of the South-East of Australia*. Pg66
C.A. Lamp, S.J. Forbes & J.W. Cade (2001) *Grasses of Temperate Australia*, Pg 156



Ehrharta erecta – seedhead



Ehrharta habit



Mircolaela stipoides

Profile Sheet

Common Name:

Wandering Jew, Trad

Botanical Name:

Tradescantia fluminensis

Family:

- Commelinaceae

Status:

- Environmental Weed, Garden escape
(Origin - South America)

Habit:

- Trailing prostrate, perennial succulent herb

Life Cycle:

- Perennial - Monocotyledon

Flowering period:

- Summer

Description:

- Soft creeping, succulent dark green herb that roots at nodes and fragments easily. Forms dense mats that restricts or stops native germination.

Leaves

- Alternate, oval, glossy with a translucent sheath at base

Flowers

- 3 White-tepals & 3 green tepals (10mm) on stalks and in clusters (15-20) at top of stems

Fruit

- Papery capsule usually containing 6 seeds that are non viable. Does not set seed in Aust

Stems

- Soft, decumbent, trailing, rooting at nodes

Roots

- Fibrous, shallow

Preferred location:

- Damp shady moist areas, creekline, gardens

Dispersal:

- Dumping, water, fragmentation, gravity. Dispersal wholly vegetatively in Aust(GSID 2006)

Distribution:

- Widespread. Not easily burnt because of fleshy nature. Frost tender

Similar Species:

- *Commelina cyanea* (Scurvy Weed)

Note: - Can causes skin irritation on animals and humans
- Numerous nursery trade cultivars

References:

B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia* Pg 20
F.J & R.G Richardson, R.C.H Shepherd(2006) *Weeds of the South-East* Pg15



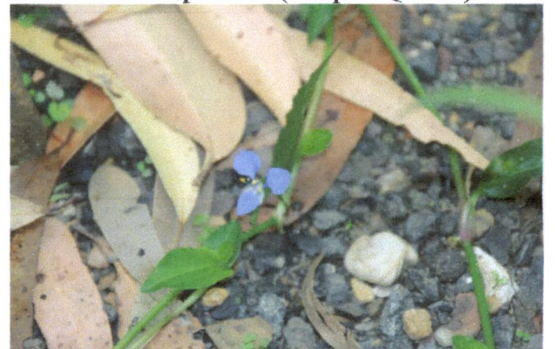
Tradescantia fluminensis



Tradescantia fluminensis



Tradescantia pallida (Purple Queen)



Commelina cyanea



Tradescantia zebrina

Profile Sheet

Common Name:

Asparagus Fern, Ground(basket) Asparagus

Botanical Name:

Asparagus aethiopicus

Family:

- Liliaceae/ Asparagaceae(Asparagus Family)

Status:

- Environmental Weed (South Africa orig)

Habit:

- Dense, prickly looking herb coming from a central crown

Life Cycle:

- Perennial (Monocot)

Flowering period:

- Winter, spring

Description:

- Perennial bushy, prostrate herb, <2m, arching stems with numerous "prickly leaves" coming from centre and masses of underground water tubers

Leaves

- Cladodes (modified stem), linear, needle like to 20mm at nodes, leaves reduced to bracts at cladode base

Flowers

- White, bell shaped on spike from leaf axil. 20 months after germination

Fruit

- Berry, <10mm, globular, green turning to red at maturity.

Stems

- Cord like, arising from rhizome

Roots

- Fibrous roots with rhizomes and tubers forming dense mats below ground

Preferred location:

- Drier parts of bushland, particularly sandy soils, closed or partial canopy

Dispersal:

- Garden dump, birds, water, rhizomes

Distribution:

- Widespread - Can dieback during hot summer but survives from tubers

Similar Species:

- Other *Asparagus* Spp.

References:

B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia* Pg 30

F.J & R.G Richardson, R.C.H Shepherd(2006) *Weeds of the South-East* Pg39

A. Muijt (2001) *Bush Invaders of the South-East of Australia*. Pg123



Asparagus aethiopicus - flowers



Asparagus aethiopicus - whole plant



Asparagus aethiopicus - root system



Asparagus aethiopicus – immature berries

Profile Sheet

Common Name:

Cobblers Peg, Pitchforks, Farmers Friend

Botanical Name:

- *Bidens pilosa*
- *Bidens subalternans*

Family:

- Asteraceace (Daisy Family)

Status:

- Exotic

Habit:

- Erect annual herb

Life Cycle:

- Annual

Flowering period:

- Summer

Description:

- Erect herb to 1.5 m with opposite leaves and barbed fruit

Leaves

- Opposite
- *B. pilosa*- oval, divided into 3-5 lance shaped segments with toothed margin (6-12 cm long)
- *B. subalternans*- divides into leaflets that are either deeply or completely divided again. (11 cm long)

Flowers

- Yellow, terminal (grouped at top)

Fruit

- Black or dark brown, ribbed, 4 angled with a 2-3 barbed structure at end

Stems

- Erect, angular

Roots

- Shallow, fibrous

Preferred location:

- Disturbed areas, wasteland, roadsides, unstable bushland

Dispersal:

- Attachment to clothes, fur

Distribution:

- Widespread

Similar Species:

- *Sigesbeckia orientalis*(Indian Weed)

References:

B.A Auld and R.W Medd (1992) *Weeds: an illustrated botanical guide to the weeds of Australia* Pg 86

F.J & R.G Richardson, R.C.H Shepherd(2006) *Weeds of the South-East* Pg119



Bidens pilosa



Bidens pilosa



Sigesbeckia (left)- *Bidens* (right)



Bidens subalternans

Profile Sheet

Common Name:

Blackberry Nightshade

Botanical Name:

Solanum nigrum

Family:

- Solanaceae (Nightshades)

Status:

- Environmental Weed (Origin – Eurasia)

Habit:

- Herb or small shrub to 1m

Life Cycle:

- Annual or short lived perennial

Flowering period:

- Spring - summer

Description:

- Erect or spreading herb/ shrub to 1m, white flowers with clusters of green then black berries

Leaves

- Alternate, ovate (4-7cm), green to purple, sometimes lobed margins, pointed tip, heavily veined

Flowers

- White (8-12mm), star shaped in clusters of 4-12, prominent yellow anthers, later becoming recurved

Fruit

- Berries (6-8mm) green then turning black/ purple when mature on down-turned stems (peduncles). Prolific seeder 20-35 seeds/ berry with high germination rates and staggered times

Stems

- Many branched with ridges, green to reddish, spreading, soft, easily broken

Roots

- Taproot with laterals

Preferred location:

- Moist well drained areas but will exist anywhere. Flowering occurs 5-9 weeks after germination until death

Dispersal:

- Water, birds

Distribution:

- Widespread

Similar Species:

-

Note – Berries and leaves contains glycol-alkaloid which causes gastroenteritis and haemolysis of red blood cells in stock. Rarely fatal. Toxic to children. Green berries and leaves used as ointment for external use – sores, wounds, rashes. Diuretic in small amounts

References:

B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia* Pg 230
F.J & R.G Richardson, R.C.H Shepherd (2006) *Weeds of the South-East* Pg 395
Lamp. C & Collet. F (1993) *Weeds in Australia*. Pg 277



Solanum nigrum- Lady Beetle
Biological control



Solanum nigrum - Habit



Solanum nigrum – Flowers & Fruit



Profile Sheet

Common Name:

Spider Plant

Botanical Name: *Chlorophytum comosum*

Family: - Liliaceae

Status: - Environmental Weed (Origin – South Africa)

Habit: - Tufted clump forming herb to 60cm

Life Cycle: - Perennial

Flowering period: - Summer

Description: - Clumping forming herb with tuberous roots and leafy plantlets on attached stems. Can form large colonies

Leaves - Narrow, linear (45cm), soft, strap like, folded, basal, sometimes variegated

Flowers - White to greenish (10mm) in spike-like cluster along outwards arching wiry stalks, 6 petals (tepals)

Fruit - Capsule, leathery, 3 sided containing flat black seeds

Stems - Long wiry stems up to 60cm that may have small leaves or flowers at end

Roots - Tuberous & rhizomes, fleshy to store water

Preferred location: - Shaded, humid areas but survives in most areas, easily propagated

Dispersal: - Dumping, leafy plantlets from the ends of wiry stems that make contact with the ground

Distribution: - Widespread, Common house plant, tolerates neglect

Similar Species: - Flax lily (*Dianella* Spp.) Leaves in one plane not radial

Note : - Studies have shown that spider plant is quite effective in cleaning indoor air by absorbing chemicals

References:

F.J & R.G Richardson, R.C.H Shepherd (2006) *Weeds of the South-East* Pg38
Harden Gwen (1993) *Flora of New South Wales*, Vol 4 pg 95



Spider Plant Mat



Flowers on variegated form



Leafy plantlets



Dianella – leaf plane

Profile Sheet

Common Name:

Moth Vine, Moth Plant

Botanical Name:

Araujia sericifera

Family:

- Asclepiadaceae

Status:

- Environmental weed (Origin – Brazil)

Habit:

- Twining, robust climber which exudes latex when broken

Life Cycle:

- Perennial

Flowering period:

- Summer

Description:

- Robust vine with opposite leaves, choko-like fruit with milky sap

Leaves

- Opposite, lance-shaped (10x5cm), green above, whitish/green below because of hairs

Flowers

- White to pale pink (25mm), 5 petals, bell shaped, clustered in upper leaf axil, slightly perfumed

Fruit

- Follicle (10x5cm), green-grey, choko like or pear-shaped, ribbed. Splits down one side when mature, releases dark brown, thin seeds which have attached tuft of hairs

Stems

- Robust, woody to 2 cm, latex inside. Climbs on other plants, fences etc.

Roots

- Shallow, woody

Preferred location:

- Disturbed lands- Damp fertile zones but survive most areas when established

Dispersal:

- Wind, water

Distribution:

- Widespread

Similar Species:

- *Parsonsia straminea* (Silkpod) pod like fruit, clear watery sap. Aerial roots with sucker pads

Notes- Sap a skin irritant, seeds-poisonous

References:

B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia* Pg 78

F.J & R.G Richardson, R.C.H Shepherd (2006) *Weeds of the South-East* Pg108

A. Muyt (2001) *Bush Invaders of the South-East of Australia*. Pg121



Flowers and immature pod



Open mature pods



Seedling Moth Vine

Profile Sheet

Madeira Vine

Common Name:

Botanical Name: *Anredera cordifolia*

Family: - Basellaceae

Status: - Environmental/ Noxious weed
(Origin – South Americas)

Habit: - Non-woody perennial, vigorous vine with warty aerial and below ground tubers

Life Cycle: - Perennial

Flowering period: - Autumn

Description: - Soft climbing vine to 20m with glossy fleshy leaves, aerial tubers and cream flowers in drooping cluster

Leaves - Alternate, < 12cm, oval/ heart shaped with wavy margin, glossy

Flowers - Small, cream, in long sprays (20cm) from leaf axil, fragrant

Fruit - Not known to produce viable seed/ fruit

Stems - Initially green turns red, cord like then rope like, soft firstly

Roots - Large (+20cm) ginger like tuber, fibrous

Preferred location: - Bushland, watercourses, rainforest edges

Dispersal: - Aerial tubers, underground tubers, water, garden escapes and dumping, nursery trade

Distribution: - Widespread

Similar Species: -

Notes - Aerial tubers may persist in the soil for 2-5 yrs (Muyt 2001) and on severed vines in the canopy for up to 5 yrs (Buchanan 1989). Readily sprouts from small vegetative parts. Difficult to kill once established. Huge aerial weight of plant destroys tree canopies.

References:

B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia* Pg 123
F.J & R.G Richardson, R.C.H Shepherd (2006) *Weeds of the South-East* Pg167
A. Muyt (2001) *Bush Invaders of the South-East of Australia*. Pg119



Anredera regrowth at ground



Anredera aerial tuber



Anredera curtain



Anredera flowers

Profile Sheet

Common Name:

Lantana

Botanical Name: *Lantana camara* (29+ biotypes naturalized)

Family: - Verbenaceae

Status: - Environmental/ Noxious
WONS = (Weed of National Significance)
One of ten worst weeds worldwide.

Habit: - Rambling thicket forming Shrub to 4m,
prickly stems with numerous flower
colours

Life Cycle: - Perennial

Flowering period: - Any time of year

Description: - Thicket forming, rambling shrub with
weak woody square stems covered in
curved prickly. Pungent when disturbed.

Leaves - Opposite, 3-10cm, toothed margin,
prominent veins, rough, and odorous
when crushed

Flowers - Dense cluster (20+) of individual 4 petal
tubular flowers (4-8mm) forming heads 2-
3 cm wide. Common colours pinks, reds,
oranges, whites, yellows or mixtures.
Flowers in each head open from the
outside inwards.

Fruit - 1 seeded succulent berry (drupe), green
then maturing to black/ purple

Stems - Woody, arching, square, armed with
short curved prickles

Preferred location: - Riparian zone, bushland, neglected sites,
frost free and fertile areas

Dispersal: - Birds, seeds, stem layering

Distribution: - Widespread

Similar Species: - *Trema tomentosa* var. *viridis* (Native
Peach)

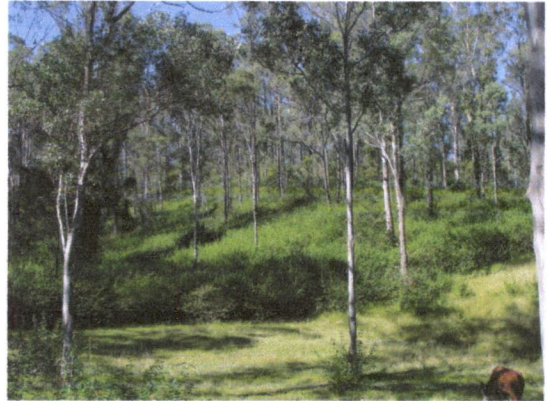
Note : - Numerous biological controls released (28) but only 4
having significant impact. Toxic to stock

References:

B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia*
Pg 234
F.J & R.G Richardson, R.C.H Shepherd(2006) *Weeds of the South-East* Pg403
A. Muiy (2001) *Bush Invaders of the South-East of Australia*. Pg187



Lantana - flower colours



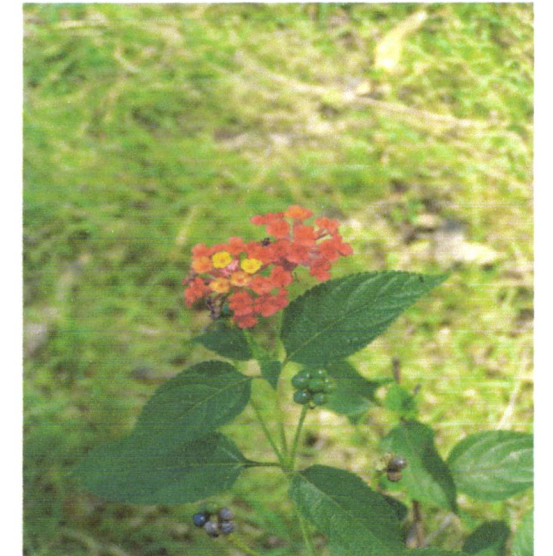
Lantana understorey



Lantana montevidensis



Scat with lantana berries



Profile Sheet

Common Name:

Small-leaf Privet

Botanical Name: *Ligustrum sinense*

Family: - Oleaceae

Status: - Environmental/ Noxious Weed
(Origin – Asia)

Habit: - Evergreen shrub

Life Cycle: - Perennial

Flowering period: - Spring

Description: - Shrub to 4m, densely branched, evergreen with terminal fragrant flowers then clusters of black berries

Leaves - Opposite, paler below, oval, wavy margin, <7cm, soft hairs over veins and young stalks

Flowers - Terminal panicle, 4 petals, scented, white

Fruit - Drupe (berry-like) in clusters, green turning black, round, 4-6 mm, drooping at end of branches

Stems - Single or multi stemmed, lenticels present (raised spots on branches)

Preferred location: - Moist habitats- riparian zones, gullies, neglected areas, high nutrient run-off zones, drainage lines

Dispersal: - Seeds –Birds & animals, water, root suckering

Distribution: - Widespread, common

Similar Species: - *Syzygium* & *Acmena* Spp. (lilly pilly), *Backhousia myrtifolia* (Grey Myrtle) oil glands = scent, leaf venation run to edge

Notes - Popular as garden hedging
- Leaves & fruits poisonous to humans and livestock
- Allergic reaction when flowering in susceptible people

References:

- B.A Auld and R.W Medd (1992) *Weeds: an Illustrated botanical guide to the weeds of Australia* Pg 191
F.J & R.G Richardson, R.C.H Shepherd(2006) *Weeds of the South-East* Pg 320
Muyt. A (2001) *Bush invaders of the South-East Australia* Pg 194-196

Flowers and wavy leaf margin



Ligustrum sinense- flowers & berries



Ligustrum sinense



Profile Sheet

Common Name:

Large-Leaf Privet

Botanical Name: *Ligustrum lucidum*

Family: - Oleaceae

Status: - Environmental Weed
Noxious Weed (Origin – China/Japan)

Habit: - Small tree

Life Cycle: - Perennial –can live over 100 years

Flowering period: - Summer - Takes 4 years to flower.

Description: - Small evergreen tree producing masses of fragrant flowers then bunches of black berries

Leaves - Opposite, Dark green upper surface, lighter underside (10-4cm), Oval, tapering to point

Flowers - White, 4 petalled, scented, in terminal (panicle) clusters on branchlets

Fruit - Berry, 5-7mm, green then turning black, matures winter, viable for 1-2 years. Seed viability up to 98%

Stems - Smooth with lenticels (raised spots on stem), Suckers from damaged stems

Roots - Shallow, branching, woody, roots regrow from cut stumps

Preferred location: - Warm, humid, moist environments with increased nutrient sources

Dispersal: - Birds, water, dormancy of up to 2 years

Distribution: - Widespread, common garden plant

Similar Species: - Lilly Pilly (*Acmena smithii*). Grey Myrtle (*Backhousia myrtifolia*)

Notes : - Suspected of causing hayfever. Berries reported poisonous to humans and livestock

References:

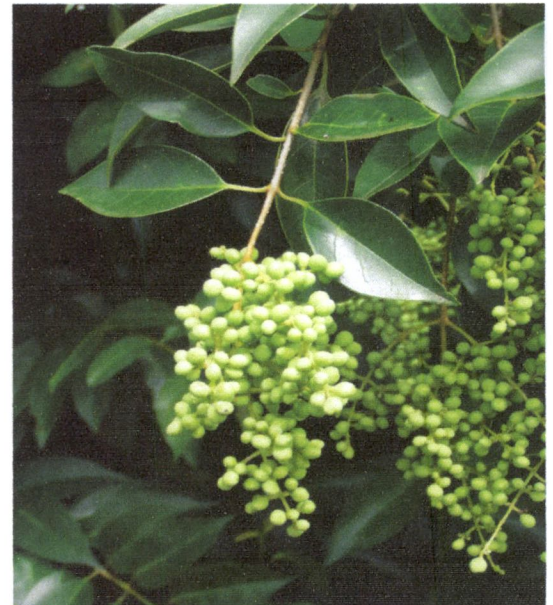
F.J & R.G Richardson, R.C.H Shepherd (2006) *Weeds of the South-East* Pg319
A. Muylt (2001) *Bush Invaders of the South-East of Australia*. Pg194



Habit



Fruit



Leaf & fruit

Control of Small Hand-pullable Plants



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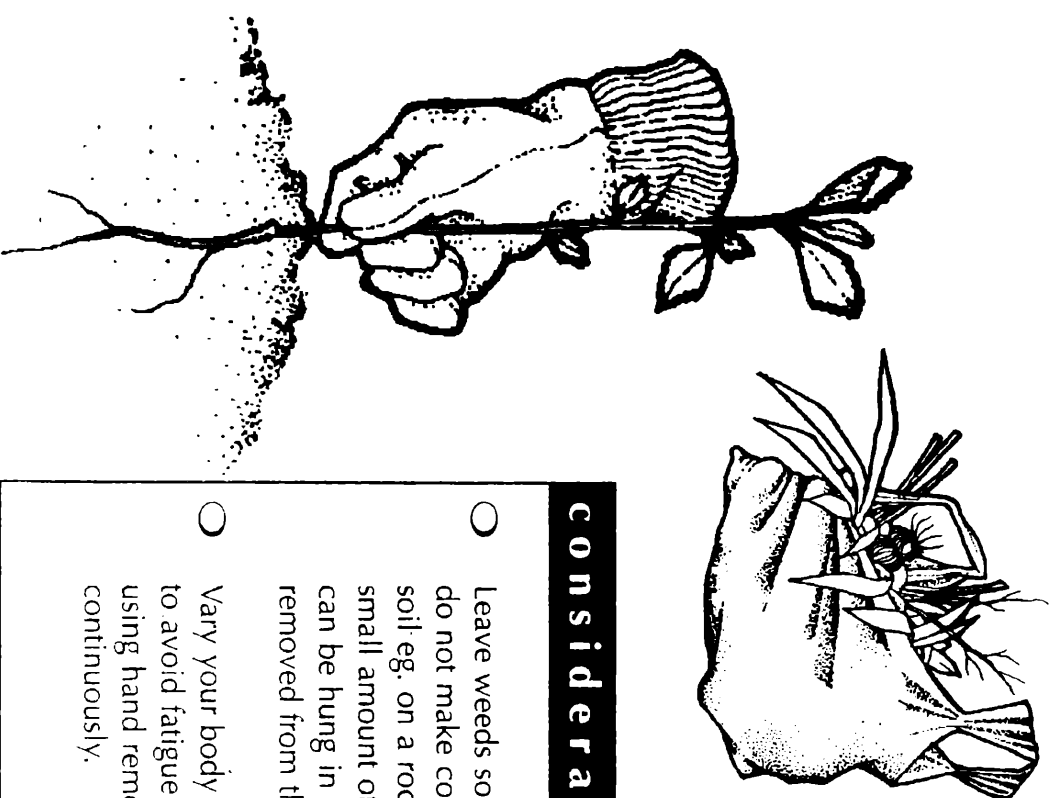
Illustrations: V Bear

- To Control:
- Small soft weeds eg. fleabane, crofton weed, small grasses
 - Seedlings of any weeds including privet, lantana, moth vine

METHODS OF REMOVAL

1 HAND REMOVAL (*Minimal Disturbance*)

- STEP 1** Gently remove any seeds or fruits and carefully place into a bag.
- STEP 2** Grasp stem at ground level.
- STEP 3** Rock plant backwards and forwards to loosen roots, and pull out gently.
- STEP 4** Carefully tap the roots to dislodge any soil. Replace disturbed soil and pat down.



considerations

- Leave weeds so that roots do not make contact with soil eg. on a rock - a small amount of debris can be hung in a tree or removed from the site.
- Vary your body position to avoid fatigue when using hand removal continuously.

Control of Vines and Scramblers



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Regenerators

Illustrations: V. Bear

Examples of vines include: ● balloon vine, morning glory, honeysuckle, cape ivy, jasmine, madeira vine, blackberry

METHODS OF REMOVAL

1 HAND REMOVAL

STEP 1 Take hold of one runner and gently pull it along the ground towards you.

STEP 2 Check points of resistance where fibrous roots grow from the nodes. Cut roots with a knife or dig out with a trowel and continue to follow the runner.

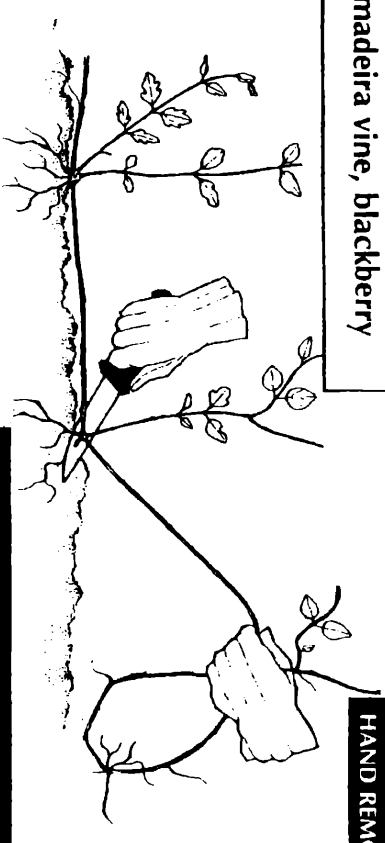
STEP 3 The major root systems need to be removed manually or scrape/cut and painted with herbicide.

STEP 4 Bag any reproductive parts.

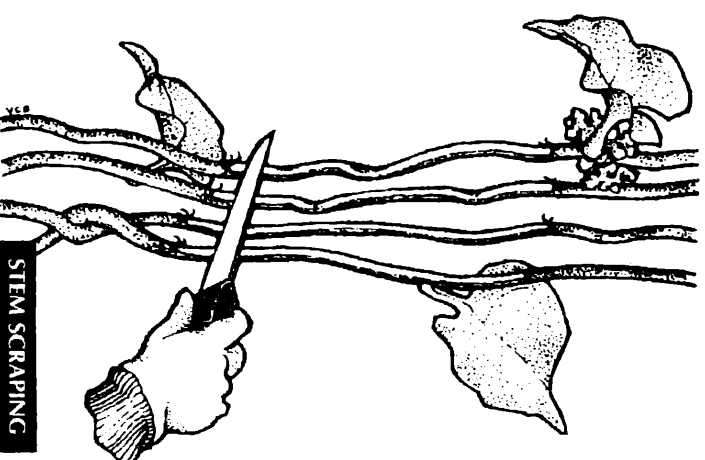
2 STEM SCRAPING

STEP 1 With a knife, scrape 15 to 30 cm of the stem to reach the layer below the bark/outer layer.

STEP 2 Immediately apply herbicide along the length of the scrape.



HAND REMOVAL



STEM SCRAPING

considerations

- A maximum of half the stem diameter should be scraped. Do not ring bark.
- Larger stems (>1 cm) should have two scrapes opposite each other.
- Aerial tubers on madeira vine should die with the plant when stem scraping is used. Those that fall from the plant in the scraping process need to be bagged.
- Vines can be left hanging in trees after treatment.

Control of Weeds with Underground Reproductive Structures



Examples: Weeds with

- Tap roots - catsear, dandelion
- Rhizomes - asparagus fern, ginger plant
- Bulbs and corms - oxalis, onion weed, watsonia, freesias, montbretia
- Tubers - madiera vine, arrow head vine



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METHODS OF REMOVAL

1 HAND REMOVAL OF PLANTS WITH A TAPROOT

Examples: Paddy's lucerne, dandelion

STEP 1 Gently remove and bag seeds or fruit.

STEP 2 Push a narrow trowel or knife into the ground next to the taproot. Carefully loosen soil. Repeat this step around the taproot.

STEP 3 Grasp stem at ground level, rock plant back wards and forwards and pull gently.

STEP 4 Gently tap the roots to dislodge soil. Replace disturbed soil and lightly pat down.

2 CROWNING (Many grasses can be crowned)

Example: asparagus fern

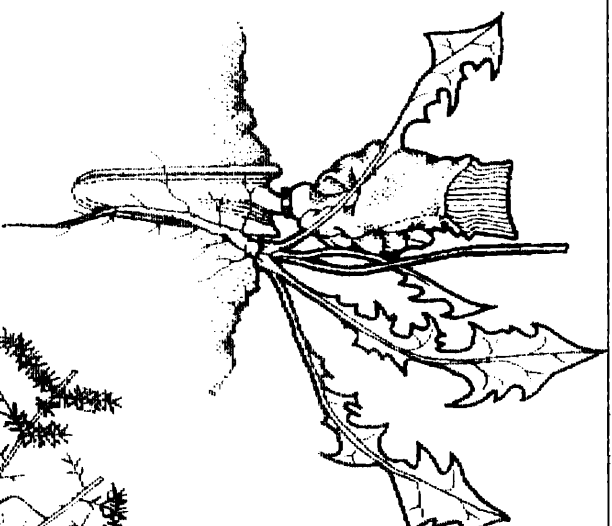
STEP 1 Gently remove and bag stems with seed or fruit.

STEP 2 Grasp the leaves or stems together so that the base of the plant is visible.

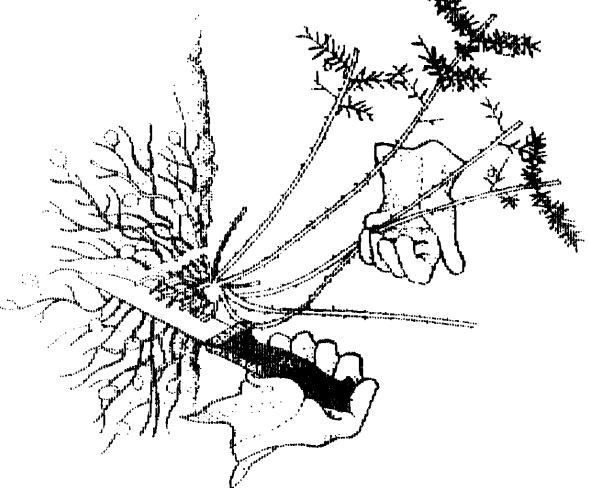
STEP 3 Insert, at an angle, a knife or lever, close to the "crown".

STEP 4 Cut through all the roots around the crown.

STEP 5 Remove and bag the crown.



HAND REMOVAL



CROWNING

Control of Weeds with Underground Reproductive Structures. cont..



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Illustrations: V Gear

METHODS OF REMOVAL

③ REMOVAL OF PLANTS WITH BULBS, CORMS OR TUBERS

Examples: onion weed, watsonia, arrowhead vine, montbretia

STEP 1 Move leaf litter away from base of plant.

STEP 2 Dig down next to the stem until the bulb or tuber is reached.

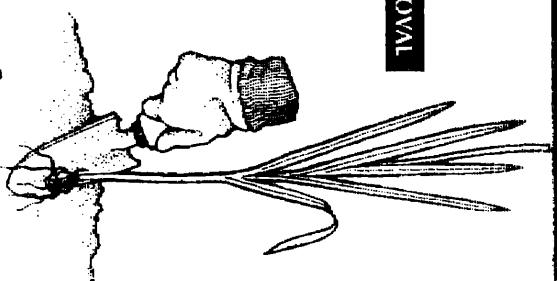
STEP 3 Remove plant and carefully bag the bulb or tuber.

④ HERBICIDE TREATMENT - STEM SWIPING

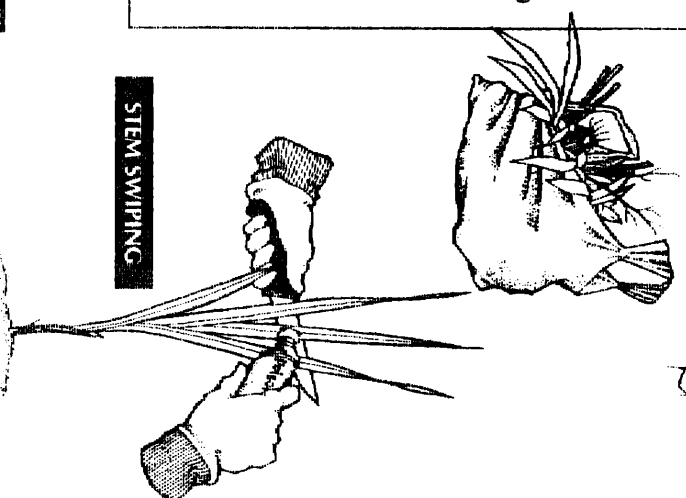
STEP 1 Gently remove any seed or fruit and carefully place into a bag.

STEP 2 Using a herbicide applicator, swipe the stems/leaves.

HAND REMOVAL



STEM SWIPING



considerations

- ☐ Further digging may be required for plants with more than one tuber (e.g. arrow head vine).
- ☐ Some bulbs (e.g. oxalis, onion weed) may have small bulbils attached or present in the soil around it. These need to be removed.
- ☐ It may be quicker and more effective to dig out the weed.
- ☐ Make sure native plants and seedlings will not be affected.
- ☐ Learn and understand how the herbicide works - for bulb and corm species the most effective time is after flowering and before fruit is set.
- ☐ Have you addressed all safety issues?

Control of Woody Weeds



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Illustrations: V Bear

Examples of woody weeds include:

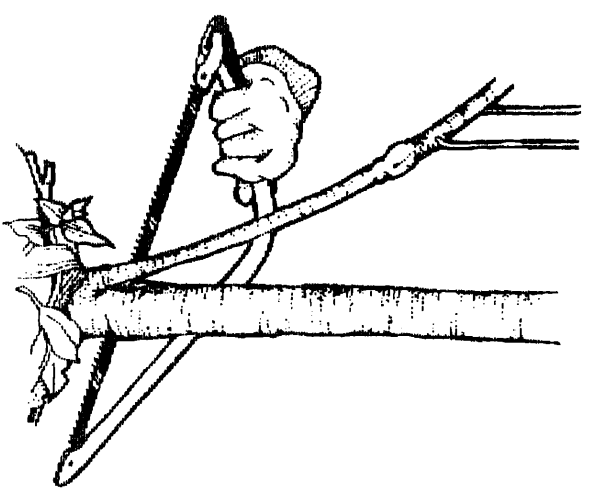
- lantana, bitou bush, cotoneaster, privet (cut and paint)
- camphor laurel, Mickey Mouse bush (ochra) and cassia/senna (stem scrape)

METHODS OF REMOVAL

1 CUT AND PAINT —Useful for small to medium sized woody weeds up to 10cm basal diameter

STEP 1
Make a horizontal cut as close to the ground as possible with secateurs, loppers or a bush saw.

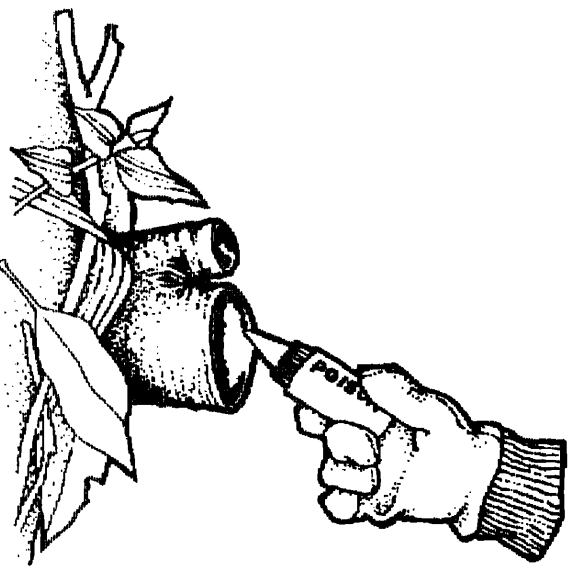
STEP 2
Immediately apply herbicide to the exposed flat stump surface.



SAFETY CONSIDERATIONS

The following general precautions should be made when using herbicides:

- Read the label before opening the container and follow the instructions.
- Wear protective clothing as directed on the label.
- Wash hands after use and before eating or smoking.



considerations

- Cuts should be horizontal to prevent herbicide from running off the stump. Sharp angle cuts are hazardous.
- Herbicide must be applied immediately before the plant cells close and translocation of herbicide ceases.
- If plants resprout, cut and paint the shoots after sufficient regrowth has occurred.
- Stem scraping can be more effective on some woody weeds.

Control of Woody Weeds cont..



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METHODS OF REMOVAL

② STEM INJECTION ③ FRILLING OR CHIPPING

For use on larger shrubs or trees above 10cm basal diameter and in inaccessible sites where removal is a problem.

STEP 1

INJECTION: At the base of the tree drill holes at a 45 degree angle into the sapwood at 5 cm intervals.

OR

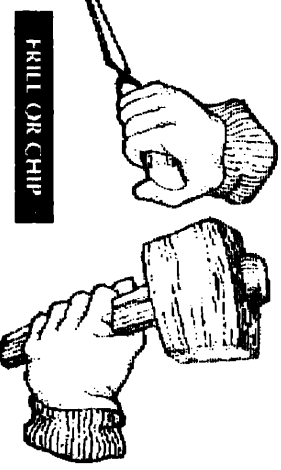
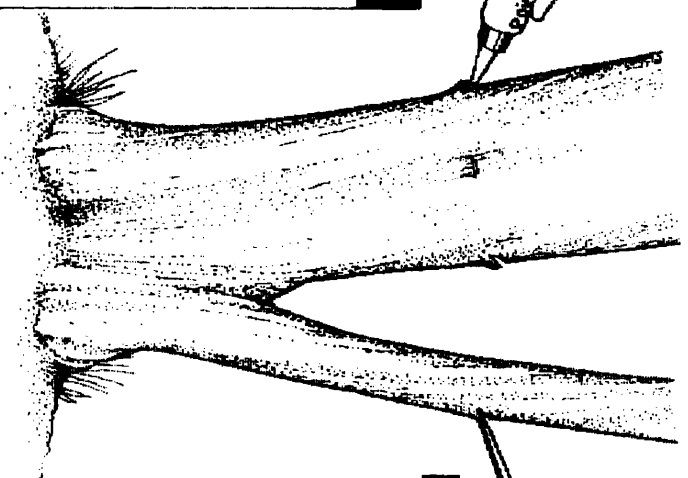
FRILL/CHIP Make a cut into the sapwood with a chisel or axe.

STEP 2

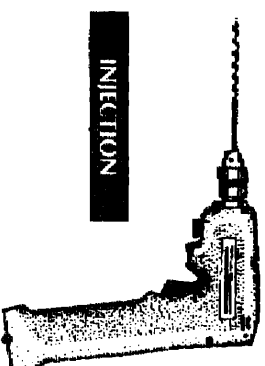
Fill each hole/cut with herbicide immediately.

STEP 3

Repeat the process at 5 cm intervals around the tree.



FRILL OR CHIP



INJECTION

considerations

- Plants should be healthy and actively growing.
- Deciduous plants should be treated in spring and autumn when leaves are fully formed.
- For multi-stemmed plants, inject or chip below the lowest branch or treat each stem individually.
- Herbicide must be injected immediately before the plant cells close (within 30 seconds) and translocation of herbicide ceases.

Treatment	Advantages (Benefits)	Disadvantages (Limitations)	Treatment	Advantages (Benefits)	Disadvantages (Limitations)
Manual Removal e.g. <i>digging, hand-weeding</i>	<ol style="list-style-type: none"> 1. Selective 2. Minimises disturbance 3. Minimises risks to indigenous flora 4. Supplements other methods 5. Can prevent seeding and spread 6. Effective on small infestations 7. Develops identification skills 	<ol style="list-style-type: none"> 1. Can disturb soils 2. Timing limitations 3. Can spread weed propagules 4. Unsuitable on large infestations 5. Inappropriate on some weeds 6. Labour intensive (costly) 			
Herbicides e.g. <i>sprays</i>	<ol style="list-style-type: none"> 1. Can be selective 2. Can prevent seeding and spread 3. Appropriate on small or large infestations 4. Can decrease fuel loads 5. Minimises soil disturbance 6. Inexpensive 	<ol style="list-style-type: none"> 1. Can be non-selective 2. Can damage or destroy indigenous flora 3. Can increase fuel loads 4. Potential impacts on the broader environment 5. Technical proficiency required 6. Operator/public hazards 			
Woody Weed Treatments e.g. <i>Cut-Paint, Drift-Fill, Filling, Ringbarking methods</i>	<ol style="list-style-type: none"> 1. Selective 2. Minimises risks to indigenous flora 3. Can result in large increases in light levels 4. Can alter nutrient and moisture availability 5. Reduces fuel loads 6. Prevents seeding and vegetative spread 7. Inexpensive (on small infestations) 	<ol style="list-style-type: none"> 1. Site disturbances can be excessive 2. Can spread propagules 3. Increased light levels/altered nutrient-moisture availability can favour weeds 4. Potential for run-off/erosion 5. Can destroy native fauna habitat 6. Encourages weed growth/germination 7. Operator/public hazards 8. Costly and labour intensive 			
Fire e.g. <i>control burns, spot-burns, burning dried material</i>	<ol style="list-style-type: none"> 1. Selective (spot-burns) 2. Removes excess foliage (for follow-up treatments) 3. Supplements other methods 4. Minimises risks to indigenous flora 5. Encourages indigenous flora regeneration 6. Encourages germination of soil-stored weed seedbank 7. Inexpensive 	<ol style="list-style-type: none"> 1. Non-selective 2. Usually does not eradicate weeds 3. Inappropriate for non-fire adapted areas 4. Seasonal and timing limitations 5. Encourages weed growth/germination 6. Altered nutrient-moisture availability can favour weeds 7. Potential for run-off/erosion 8. Fauna, people and property risks 9. Specialist knowledge required 			
Slashing, Mowing and Cutting e.g. <i>brushcutters, mowers, slashers</i>	<ol style="list-style-type: none"> 1. Can be selective 2. Minimises soil disturbance 3. Minimises risks to indigenous flora 4. Can prevent seeding/spread 5. Removes excess foliage (for follow-up treatments) 6. Supplements other methods 7. Inexpensive 	<ol style="list-style-type: none"> 1. Often non-selective 2. Usually does not eradicate weeds 3. Can prevent indigenous flora seeding 4. Can introduce and spread weed propagules 5. Can encourage weed growth 6. Can increase fuel loads (dried material) 7. Can elevate nutrient levels 			
Biological Control	<ol style="list-style-type: none"> 1. Selective 2. Can suppress growth and spread 3. Supplements other methods 	<ol style="list-style-type: none"> 1. Timing limitations 2. Variable results 3. Does not eliminate weeds 			
			Biological Control cont/...	<ol style="list-style-type: none"> 5. Minimal labour input (in the field) 6. Minimal direct environmental impacts 	<ol style="list-style-type: none"> 5. Expensive to develop 6. Unknown long-term environmental impacts
			Grazing e.g. <i>goats, cows, sheep, horses</i>	<ol style="list-style-type: none"> 1. Can eradicate weeds 2. Can remove excess foliage (for follow-up treatments) 3. Supplements other methods 4. Inexpensive 	<ol style="list-style-type: none"> 1. Non-selective 2. Timing limitations 3. Disturbs soils 4. Encourages weed growth 5. Often introduces weed propagules 6. Inappropriate for many habitats 7. Prevents indig.flora growth/regeneration 8. Can elevate nutrient levels 9. On-going management required 10. Potential for run-off/erosion 11. Aesthetics undermined
			Soil Cultivation and Scaping	<ol style="list-style-type: none"> 1. Can eradicate weeds 2. Reduces nutrient loads 3. Removes soil-stored weed seedbank 4. Can aid site rehabilitation 	<ol style="list-style-type: none"> 1. Non-selective 2. Disturbs soils 3. Spreads propagules 4. Destroys indigenous flora/fauna habitat 5. Removes soil-stored indigenous flora seedbank 6. Potential for run-off/erosion 7. Expensive 8. Site rehabilitation required 9. Technical proficiency required
			Mulches and Smothering Treatments	<ol style="list-style-type: none"> 1. Inhibits weed growth 2. Inhibits weed invasion 3. Can complement site rehabilitation 4. Erosion/run-off control 5. Aesthetics enhanced 	<ol style="list-style-type: none"> 1. Usually non-selective 2. Can encourage weed growth 3. Prevents indig.flora growth/regeneration 4. Can introduce weed propagules 5. Can alter soil chemistry 6. Affects soil, micro-flora and fauna 7. On-going maintenance required 8. Aesthetics undermined 9. Costly and labour intensive
			Solarisation e.g. <i>plastic sheeting</i>	<ol style="list-style-type: none"> 1. Can be selective 2. Can control difficult-to-kill plants 3. Inhibits/prevents seeding/spread 4. Supplements other methods 5. Appropriate on a small scale 6. Low costs (once installed) 	<ol style="list-style-type: none"> 1. Usually non-selective 2. Ineffective on many weeds 3. Unsuitable for large infestations 4. Prevents indigenous flora growth/regeneration 5. Affects soil, micro-flora and fauna
			Competition Strategies and Practices e.g. <i>direct seeding, plantings, natural recruitment</i>	<ol style="list-style-type: none"> 1. Suppresses weeds 2. Can alter light levels and nutrient-moisture availability 3. Restores vegetation structure 4. Restores floristic diversity 5. Enhances fauna habitat 	<ol style="list-style-type: none"> 1. Altered conditions can favour weeds 2. Can undermine vegetation structure with inappropriate species selection 3. Often entails intensive management input during establishment phase 4. Can be labour intensive (costly) 5. Specialist knowledge required